APPENDIX G2

PROJECT GEOTECHNICAL DATA

I-405, SR520 to SR522 Stage 1 (Kirkland Stage 1)

Draft RFP

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INTERSTATE 405 Project Team
Congestion Relief & Bus Rapid Transit Projects

INTERSTATE 405 Corridor Program

Congestion Relief & Bus Rapid Transit Projects

Appendix G2
Project Geotechnical Data

Geotechnical Boring Database

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Introduction

A database has been developed for reviewing image files for the boring logs on the I-405 projects. The database provides a form for selecting image files and a second form which displays the selected image. A boring name selected in the database form can be found in a Microstation file by either centering a selected view on the boring text or setting the window area around the boring text. Also, the images in the database for a boring identified in a Microstation drawing file can be located in the database and its associated images displayed.

Image Files

The image files were created by scanning original documents into jpg format files and storing them in folders for various segments along the I-405 corridor. The jpg file names consist of three parts, i.e. the job name, the boring name, and a three digit image number. Each part is separated by an underscore character. For example, file L0889_BRZ-2_003.jpg is the third image file associated with boring BRZ-2 from job number L0889.

The image files are stored in subfolders of a parent folder. The database includes a list of these files along with their subfolder names. To move the image files to a different location, you need to move all the image files and subfolders from the original parent folder to the new parent folder. Then redefine the parent folder in the database by using the Browse button on the Review Boring Files form.

Microstation Text Elements

Several MicroStation V8 drawing files were used to identify the boring locations for various segments along the I-405 corridor. Text node elements were drawn in each Microstation file in the approximate location of each boring. Each of these text nodes consists of two lines. The first line is the boring name and the second line is the job name. The database includes a list of these text nodes along with their north and east coordinates.

Microsoft Access Database Description

The database file is named borings.mdb. It is a Microsoft Access 2000 version file. The database contains the tables, forms, and macros which allow a user to view image files associated with a given job number, boring name, and image number.

Database Required References

The application requires the following references:

Name	Default Path and File Name
stdole	C:\WINDOWS\System32\STDOLE2.TLB
MicroStationDGN	C:\Program Files\Bentley\Program\MicroStation\USTATION.EXE
Scripting	C:\WINDOWS\System32\scrrun.dll
DAO	C:\Program Files\Common Files\Microsoft Shared\DAO\dao360.dll
ADODB	C:\Program Files\Common Files\system\ado\msado15.dll

If any of these files are not found by the database, you can attach them using the following procedure:

1. Open file borings.mdb. If any error messages appear, click OK or End to cancel them.

2. On the main Access menu, click on Tools> Macro> Visual Basic Editor. This will display the Visual Basic Editor window.

3. On the Microsoft Visual Basic main menu, click on Tools> References. This will display the References dialog box.

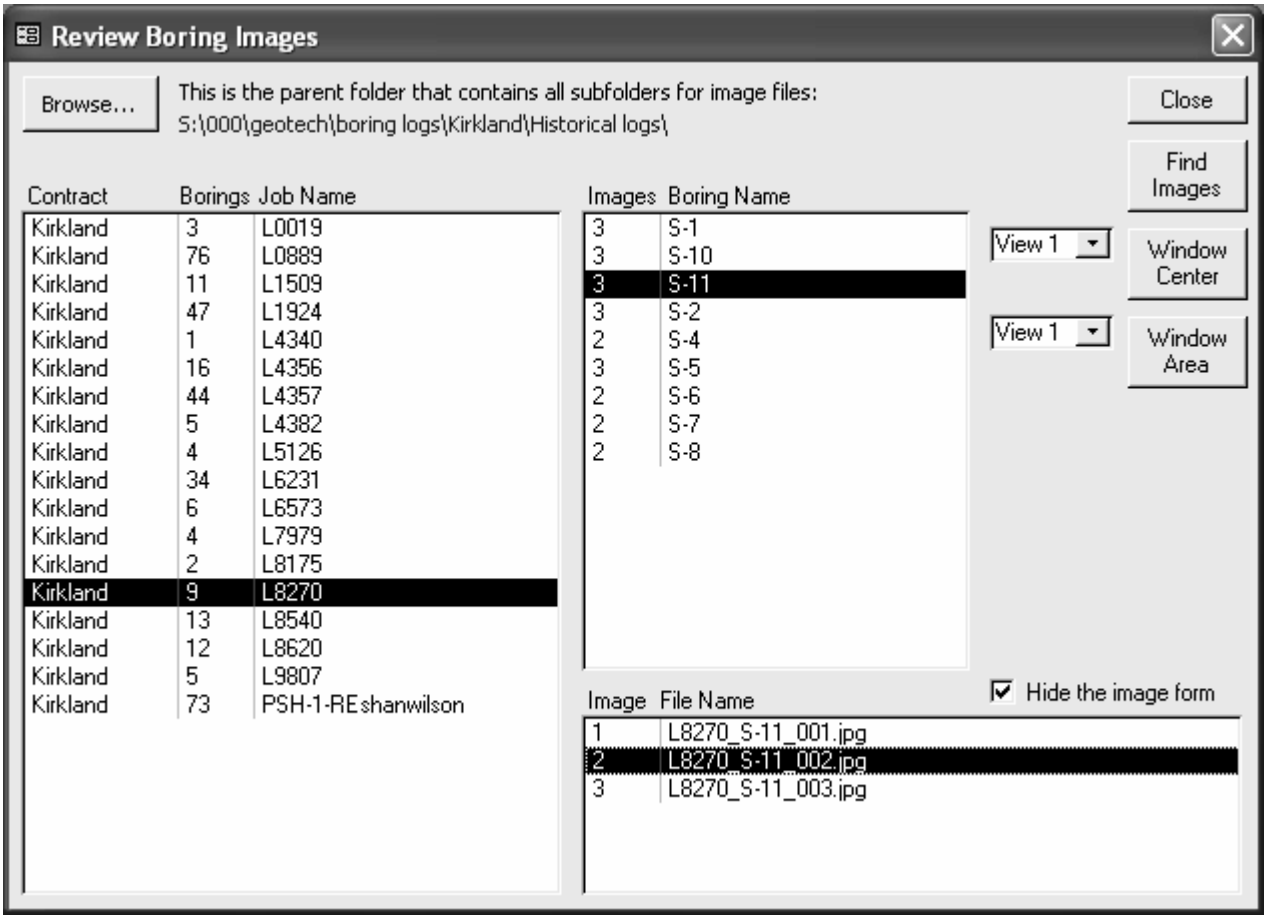
4. Click on the Browse button and find the missing files. After selecting a file, it will appear at the bottom of the Available References list with a check mark in the box to the left of the name.

5. Click on the OK button to close the dialog box.

Review Boring Images Form

The "Review Boring Images" form allows you to select images for a boring location from either a list of the image files or by selecting a text element in a MicroStation design file.

Form Snapshot



Form Buttons

The **Browse** button opens a Browse for Folder dialog that allows you to chage the parent folder. The database looks for image files in the parent folder and its subfolders.

The **Close** button closes the form and the Access application.

The **Find Images** button activates a Microstation V8 drawing and waits for you to select a text node. When you select a text node, the job number and boring name from that text node will be selected in the Review Boring Images form. You can continue selecting text nodes or enter a Reset to return to the database form.

The **Window Center** button moves the center of the view identified in the adjacent combobox to the location of the current boring.

The **Window Area** button defines a window around the selected boring in the view identified in the adjacent combobox.

Form Listboxes

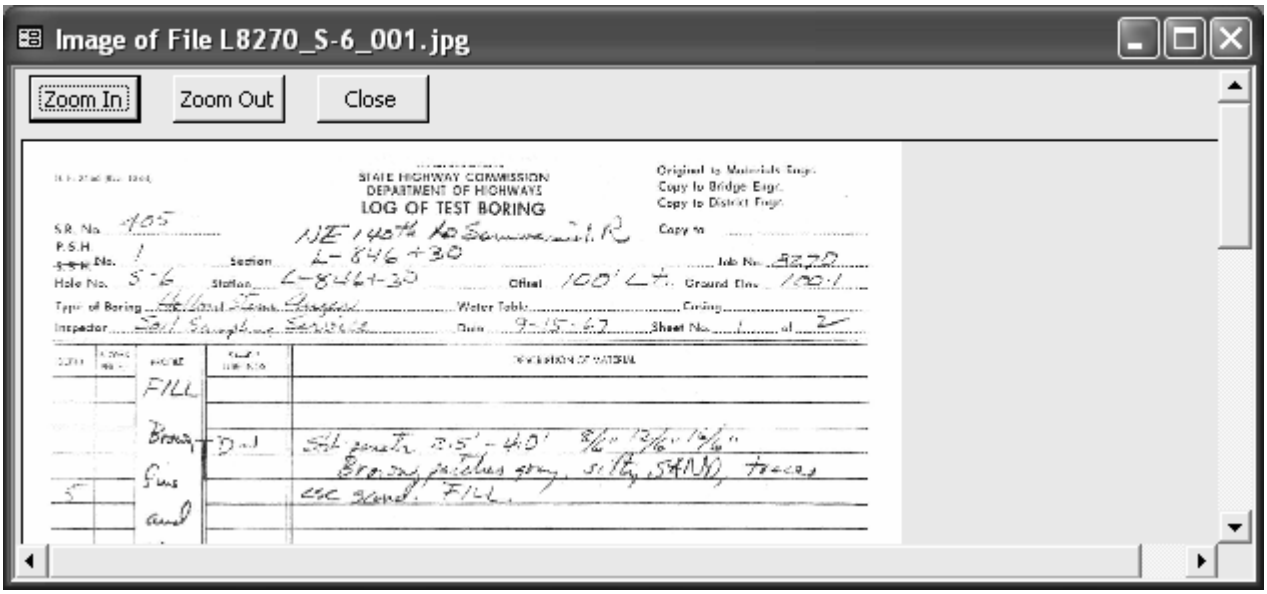
There are three listboxes displayed on the Review Boring Images form. The list on the left includes all of the job numbers included in the database. The list on the upper right includes all of the borings associated with the job selected in the job numbers list. The list on the lower right includes all of the image files associated with the boring selected in the borings list.

A check box is provided above the images list for hiding the image form. When this box is checked the Image form is not displayed.

Image Form

The "Image" form shows the image for the selected image file in the Images listbox. The image form is displayed when the "Hide the image form" checkbox on the Review Boring Files form is unchecked. The form can be resized to change its shape or size. When the image is too large to fit within the current form size, horizontal and/or vertical scroll bars will appear which will allow you to pan around the image.

Form Snapshot



Form Buttons

The **Zoom In** button increases the scale of the image by approximately 10% each time it is clicked. The scale can be increased up to approximately 370%.

The **Zoom Out** button decreases the scale of the image by approximately 10% each time it is clicked. The scale can be decreased until the full image is visible at its original scale.

The **Close** button closes the Image form.

Sample Workflow

The following procedure describes the steps to set-up and use this database.

Copy the Files

Copy the database and graphics files from the CD to a local or network directory. The database file (borings.mdb) is self-contained. The Microstation drawing files (KirklandS-1.dgn through KirklandS-6.dgn) contain text node elements used by the database. Drawing file BoringLoc.dgn is an empty master file which references the six Kirkland files as well as the existing surface topography file (3ex157a251d_bm.dgn).

Description	CD File Path and Name
Database file	`d:\Kirkland RFP CD\borings.mdb`
Master file	`d:\Kirkland RFP CD\Microstation files\BoringLoc.dgn`
Existing topography	`d:\Kirkland RFP CD\Microstation files\3ex157a251d_bm.dgn`
Reference file	`d:\Kirkland RFP CD\Microstation files\KirklandS-1.dgn`
Reference file	`d:\Kirkland RFP CD\Microstation files\KirklandS-2.dgn`
Reference file	`d:\Kirkland RFP CD\Microstation files\KirklandS-3.dgn`
Reference file	`d:\Kirkland RFP CD\Microstation files\KirklandS-4.dgn`
Reference file	`d:\Kirkland RFP CD\Microstation files\KirklandS-5.dgn`
Reference file	`d:\Kirkland RFP CD\Microstation files\KirklandS-6.dgn`

The files for the scanned images from the boring logs are stored as jpg files in several subfolders of "D:\Kirkland RFP CD\Kirkland\Historical logs\". The database is currently set to look in this folder and so will work without any changes. If you want to move the image files to a network drive, you will need to copy all of the subfolders under the previously specified folder to the new folder. Then, you will need to change the path the database looks in by clicking on the Browse button on the main form in the database.

Open the Files

Open the Microstation master file (BoringLoc.dgn) and the Microsoft Access database file (borings.mdb). The database file will open with the "Review Boring Images" form open inside of the main Access window.

Select a Boring

The left list box on the database form show all of the Job included in the database. Click on the third item in the list, Job Name L1509. The list box to the right will refresh with the eleven boring locations for this job number. Click on the third item in the right list box, Boring Name H-3-67. The list box at the bottom of the form will refresh with the two images associated with this boring location.

View the Image Files

Uncheck the "Hide the image form" check box just above the list of image files. A second form will open displaying the selected image. The caption at the top of the image form will say "Image of File L1509_H-3-67_001.jpg". The Image form can be resized and both forms can be moved as desired. Click on the Zoom In button a few times to increase the magnification of the image. While zoomed in, click on

the second image for boring H-3-67. The Image form will refresh with the second image and the form caption will change to the new file name. Click on Job Name L6231, then click on Boring Name C-7. The image files list box will refresh with the single image for this boring and the Image form will refresh with that image.

Window a Boring Location

The "Window Area" and "Window Center" buttons will change a Microstation view to show the location of the currently selected boring. The first button changes the view area to a square of 250 feet on a side centered on the selected boring. This is useful for viewing the general location of a boring. The second button will place the center of the selected view at the location of the selected boring. This is useful when you have zoomed in close to the borings to see additional details.

With View 1 selected in the drop-down list next to the Window Area button, click that button. Switch to Microstation and look at View 1. You will see a portion of NE 124th Street with Boring C-7 located on the north side of the street near the entrance to the southbound loop on-ramp. Switch back to the Access database and click on Boring Name C-2. Then click on the Window Area button. Switch back to Microstation and you will see the intersection of NE 124th Street and 116th Avenue NE with the text call-out for Boring C-2 in the middle of the intersection. Note that the actual boring is located on the north side of the intersection at the end of the leader for the text label. In Microstation, zoom into the intersection in View 1. Switch back to Access and click on Boring Name C-7 again. Then click on the Window Center button. In Microstation you will be back at boring C-7 but now the view will be zoomed in.

Find Boring Images

The "Find Images" button allow you to select a boring name from the Microstation drawing and locate the corresponding Job and Boring names in the list boxes on the Review Boring Images form. Switch to Access and click on the Find Images button. Microstation will activate and the prompt at the lower left will be "Review Element> Select element to Review". Click on boring label for Boring Name 1, Job Number L5126 which is just west of boring C-7. The element will highlight. Click again to confirm the selection and Access will reactivate with Job Name L5126 selected in the Job Name list box and Boring Name 001 selected in the Boring Name list box.

Appendix G2 CD Contents

The content of this CD includes:

Kirkland folder

This folder contains 3 sub folders:

Historical logs

The historical logs folder contains all the historical geotechnical boring logs for this section and they are listed in sub folders by WSDOT Job design number.

Historical reports

The historical reports folder contains all historical geotechnical reports for this section and they are listed in sub folders by WSDOT Job design number.

I-405 Team borings

The I-405 Team borings folder contains all borings and lab test reports that have been provided by the I-405 team.

Microstation Files folder

This folder contains all Microstation files that are required to run the Macro on this CD.

Borings.mdb

This file is the macro that is required to view the boring logs.

ReadMe.doc

This file explains how to access the geotechnical information in the database.